



(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:
01.04.2009 Bulletin 2009/14

(51) Int Cl.:
H01L 27/32 (2006.01) H01L 51/52 (2006.01)

(43) Date of publication A2:
19.11.2008 Bulletin 2008/47

(21) Application number: **08156069.0**

(22) Date of filing: **13.05.2008**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MT NL NO PL PT RO SE SI SK TR
Designated Extension States:
AL BA MK RS

- **Lee, Kwan-Hee**
Seoul 137-875 (KR)
- **Kim, Mi-Kyung**
Gyeonggi-do (KR)
- **Kim, Dong-Hun**
Gyeonggi-do (KR)
- **Kwak, Jae-Hyun**
Gyeonggi-do (KR)
- **Son, Jung-Ha**
Gyeonggi-do (KR)

(30) Priority: **16.05.2007 KR 20070047849**

(71) Applicant: **Samsung Mobile Display Co., Ltd.**
Suwon-si
Gyeonggi-do (KR)

(72) Inventors:
• **Chun, Min-Seung**
Gyeonggi-do (KR)

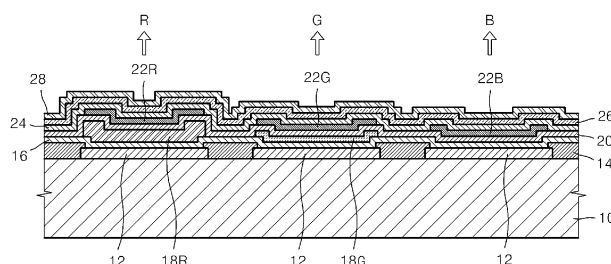
(74) Representative: **Hengelhaupt, Jürgen et al**
Gulde Hengelhaupt Ziebig & Schneider
Patentanwälte - Rechtsanwälte
Wallstrasse 58/59
10179 Berlin (DE)

(54) **Organic light emitting device**

(57) Provided is an organic light emitting device including: a substrate (10); a first electrode (12); a second electrode (28); and an organic layer comprising a hole injection layer (16) and an emissive layer (22), and being disposed between the first electrode (12) and the second electrode (28), wherein the emissive layer (22) comprises a red emissive layer (22R), a green emissive layer (22G) and a blue emissive layer (22B), wherein the organic layer comprises at least one selected from a) a first auxiliary layer (18R) disposed between the hole injection layer (16) and the red emissive layer (22R) adapted to adjust

a resonance cycle of a red light and b) a second auxiliary layer (18G) disposed between the hole injection layer (16) and the green emissive layer (22G) adapted to adjust a resonance cycle of a green light, wherein a material used to form the first auxiliary layer (18R) is different from a material used to form the hole injection layer (16), and a material used to form the second auxiliary layer (18G) is different from a material used to form the hole injection layer (16). The organic light emitting device has low turn-on voltage, high current density, high luminance, high current efficiency, high power, long life-time, and excellent color purity.

FIG. 1





EUROPEAN SEARCH REPORT

Application Number
EP 08 15 6069

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 2006/017377 A1 (RYU SEOUNG-YOON [KR]) 26 January 2006 (2006-01-26)	1-5,7-14	INV. H01L27/32
Y	* paragraphs [0037] - [0042], [0045], [0049] - [0051], [0058], [0062], [0066], [0070], [0071], [0077] - [0079], [0085]; figures 2,3 *	1,10-12	H01L51/52
A	HOSOKAWA C ET AL: "HIGHLY EFFICIENT BLUE ELECTROLUMINESCENCE FROM A DISTYRYLARYLENE EMITTING LAYER WITH A NEW DOPANT" APPLIED PHYSICS LETTERS, AIP, AMERICAN INSTITUTE OF PHYSICS, MELVILLE, NY, vol. 67, no. 26, 25 December 1995 (1995-12-25), pages 3853-3855, XP000548843 ISSN: 0003-6951 * figure 1b *	2	
A	US 2003/209972 A1 (HOLMES RUSSELL JAMES DELMAR [US] ET AL) 13 November 2003 (2003-11-13) * paragraph [0076] *	5	TECHNICAL FIELDS SEARCHED (IPC) H01L
Y	EP 1 450 419 A (EASTMAN KODAK CO [US]) 25 August 2004 (2004-08-25) * paragraphs [0067] - [0071] *	1,10-12	
Y	EP 1 052 708 A (PIONEER CORP [JP]) 15 November 2000 (2000-11-15) * paragraphs [0035] - [0039], [0063]; figure 4 *	1	
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 25 February 2009	Examiner Beierlein, Udo
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 08 15 6069

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

25-02-2009

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 2006017377	A1	26-01-2006	CN 1725921 A	25-01-2006
			JP 2006041471 A	09-02-2006
			KR 20060007899 A	26-01-2006
			US 2008252206 A1	16-10-2008

US 2003209972	A1	13-11-2003	AU 2003269821 A1	06-01-2004
			TW 271121 B	11-01-2007
			WO 2004001796 A2	31-12-2003

EP 1450419	A	25-08-2004	CN 1543281 A	03-11-2004
			JP 2004253390 A	09-09-2004
			KR 20040074956 A	26-08-2004
			US 2004160172 A1	19-08-2004

EP 1052708	A	15-11-2000	JP 4136185 B2	20-08-2008
			JP 2000323277 A	24-11-2000
			US 2003044639 A1	06-03-2003
